

USSR

UDC 616.24-008.4-073.916

VOROB'YEVA, Z. V., Second Therapy Department, Central Institute for the
Advanced Training of Physicians

"Study of Gas Absorption in the Lungs Using Xe^{133} "

Moscow, Meditsinskaya Radiologiya, No 5, 1971, pp 7-13

Abstract: The author describes a mathematical model of mass exchange of gases in the lungs using xenon (the entry of external gases into the lung capillaries is a three-stage process -- they must pass through gas already in the lungs, tissue of the membrane, and fluid/blood; hence "mass exchange" is the penetration of substances through several media.) The model was used to characterize gas absorption while simultaneously determining the residual volume, total lung capacity, and uniformity of ventilation. Values are given of mass exchange under normal conditions and in such diseases as acute pneumonia, sarcoidosis, lung cancer, anemia, and so forth. The procedure can be used as an independent diagnostic test of lung function and as a means of evaluating the gas supply of the body.

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1/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--A MICROSCOPE STUDY OF MEMBRANE POTENTIAL OF THE FROG'S BLADDER
PARASYMPATHETIC GANGLION'S NEUTONESS -U-
AUTHOR--(03)-BAZANOVA, I.S., VOROBYEVAND, V.S., YEUDOKIMOV, S.A.
COUNTRY OF INFO--USSR
SOURCE--FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA, 1970, VOL 56,
NR 5, PP 712-724.
DATE PUBLISHED----- 70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--NEURON, GENITOURINARY SYSTEM, BIOPOTENTIAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/1172 STEP NO--UN/0239/70/C56/005/0718/0724
CIRC ACCESSION NO--420126774
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0126774

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MEMBRANE POTENTIAL WAS SHOWN TO BE 72 PLUS OR MINUS 16.5 MV. A MICROELECTRODE OF LESS THAN 1 MICRON IN DIAMETER DOES NOT APPARENTLY INJURE A NEURON WHILE PENETRATING IT. NEITHER REPEATED INSERTING OF THE MICROELECTRODE CAUSES ANY STRUCTURAL CHANGES OR CHANGES IN THE MEMBRANE POTENTIAL. WHILE MICROELECTRODE OF MORE THAN 2 MICRONS IN DIAMETER CAUSES SHARP STRUCTURAL CHANGES..

FACILITY: PAVLOV'S INSTITUTE OF PHYSIOLOGY ACAD. SCI. USSR, Leningrad.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--ON MECHANISM OF FORMATION OF A HIGH FIELD REGION NEXT TO THE
CATHODE IN SEMIINSULATING GAAS -U-
AUTHOR--(02)-VOROBYYOV, YU.V., TRETYAK, O.V. ✓
CCUNTRY OF INFO--USSR
SOURCE--UKRAYIN. FIZ. ZH. (USSR), VOL. 15, NO. 5, P. 827-32 (MAY 1970)
DATE PUBLISHED---MAY70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--SPACE CHARGE, RESISTIVITY, CATHODE, GALLIUM ARSENIDE, FERMI
LEVEL, COULOMB FIELD, CURRENT DENSITY, CURRENT STABILIZATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/1803 STEP NO--UR/0185/70/015/005/0827/0832
CIRC ACCESSION NO--AP0133708
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133708

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MECHANISM WAS INVESTIGATED OF FORMATION OF A HIGH RESISTANCE SPACE CHARGE REGION NEXT TO THE CRYSTAL CATHODE BECAUSE OF A RESTRICTED EMISSIONAL ABILITY OF THE CONTACT. A CORRELATION WAS FOUND BETWEEN THE VALUE OF SATURATION CURRENT AND THE AREA OF THE CONTACT AS WELL AS THE POSITION OF THE FERMI LEVEL IN A NEAR CONTACT LAYER. AN EXPRESSION WAS OBTAINED FOR THE INITIAL RATE OF CURRENT DECREASE AGREEABLE TO THE EXPERIMENT. FORMATION OF THE HIGH FIELD REGION CAN CAUSE INSTABILITY OF ELECTRIC CURRENT UNDER CONDITIONS WHEN AN AVERAGE FIELD IN THE SAMPLE IS NOT SUFFICIENT FOR OBSERVATION OF THE BULK NEGATIVE DIFFERENTIAL RESISTANCE.

UNCLASSIFIED

USSR

UDC 536.24

VORODKIN, B. S.

"The Temperature Field of a Surface Circular Flow Arising in the Operation of a Pneumatic Installation"

V sb. MAGI Simpoz. Led i yego vozdeystviye na gidrotekhn. sooruzh., 1972
(MAGI Symposium. Ice and Its Action on Hydropengineering Equipment, 1972 --
Collection of Works), Place of publication not given, 1972, pp 301-303
(from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B918)

Translation: A circular flow that arises in the operation of a pneumatic installation on the surface of the reservoir is considered as a semi-bounded fan turbulent stream. The thermal balance equation is derived in which the velocity at a given radius is replaced by its average value. A solution of the equation is obtained in the form of a Fourier series. T. A. Girshovich.

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1/2 014
TITLE--STUDY OF THE WORKING CAPACITY OF AN OPERATOR UNDER CONDITIONS OF A
PROLONGED BED REST -U-
AUTHOR--(04)-ZAVIALOV, YE.S., MELNIK, S.G., CHUGUNOV, G.YA., VORONA, A.A.
COUNTRY OF INFO--USSR
SOURCE--KOSMICHESKAIA BIOLOGIIA I MEDITSINA, VOL. 4, JAN.-FEB. 1970, P.
61-65
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--HYPODYNAMIA, AIRCRAFT PERSONNEL, EXERCISE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1997/1963
CIRC ACCESSION NO--AP0120606
STEP NO--UR/0453/70/004/000/0061/0065
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120606

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. INVESTIGATION OF THE EFFECTS OF
HYPOKINESIA ON THE WORKING CAPACITY OF 6 SUBJECTS WHO PERFORMED VARIOUS
MANUAL AIRCRAFT CONTROL ASSIGNMENTS DURING A 100 DAY PERIOD OF BED REST,
WITH OR WITHOUT PHYSICAL EXERCISES ON A SPECIAL STAND. THE NEGATIVE
EFFECTS OF HYPOKINESIA ON THE PERFORMANCE OF THE SUBJECTS ARE NOTED.
ROUTINE CONTROL OPERATIONS REQUIRING INSTRUMENT DIAL SCANNING AND WELL
COORDINATED PRECISION MOTIONS WERE AFFECTED THE MOST.

UNCLASSIFIED

Microelectronics

USSR

UDC 621.3.049.75

VORONA, A. V., MATVEYCHUK, A. I., SAPEGIN, F. M.

"A Holder for a Printed-Circuit Base"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 2, Jan 71, Author's Certificate No 290495, division H, filed 1 Apr 68, published 22 Dec 70, p 170

Translation: This Author's Certificate introduces a holder for printed circuit bases. The device contains a base and a spring. As a distinguishing feature of the patent, the mass of the holder is reduced and access is provided to both sides of the printed-circuit base. The base of the holder is made in the form of a split ring equipped with an inner triangular channel for the printed-circuit base, and an outer channel of any shape which accommodates a spring-loaded split ring.

USSR

UDC: 621.396.6-181.5

PARFENYUK, V. M., VORONA, A. V., ZHDANOV, A. N., MATVEYCHUK, A. I.

"A Device for Charging Evaporators"

USSR Author's Certificate No 270433, filed 20 Jan 67, published 13 Aug 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1V222 F)

Translation: This Author's Certificate introduces a device for charging evaporators such as vacuum atomizing chambers. The device contains a ratchet drum, a trough and a shield. As a distinguishing feature of the patent, the operational reliability of the device is improved by fastening the shield to the trough, the housing of the device is coupled through leaf springs to a rotating lever, and the ratchet drum is fitted with a socket which accommodates a plunger.

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1/2 029 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--MEASUREMENT OF THE CROSS SECTION FOR SECOND ORDER IMPACT OF AN
EXCITED MERCURY ATOM WITH A CESIUM ATOM, HG 6 PRIME3 P SUB1 PLUS CS
AUTHOR--(03)-BRODSKIY, V.B., VORONCHEV, A.T., TATARINOV, M.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. TEKH. FIZ. 1970, 40(5), 1116-19
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--NUCLEAR CROSS SECTION, NUCLEAR REACTION, NUCLEAR COLLISION,
EXCITED STATE, MERCURY, CESIUM, PHOTOIONIZATION, ELECTRON EMISSION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3009/0078 STEP NO--UR/0057/70/040/005/1116/1119
CIRC ACCESSION NO--AP0138943
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0138943

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CROSS SECTION OF THE TITLE REACTION WAS DETD. AS (6 ± 2) TIMES 10^{-14} CM² PRIME NEGATIVE 2 FROM EXPTL. DATA ON THE RATIO OF THE CROSS SECTION OF THE 2ND ORDER COLLISION OF AN EXCITED HG ATOM WITH A CS ATOM TO THE CROSS SECTION OF THE POLARIZATION OF CS ATOM BY THE HG RESONANCE LINE (2537 ANGSTROM). THE RATIO OF THE CROSS SECTIONS WAS DETD. FROM EXPTL. DATA ON THE RATIO OF ELECTRON GENERATED DURING THE 2ND ORDER COLLISION AND THOSE GENERATED BY PHOTOIONIZATION. THE CONC. OF THE EXCITED HG ATOMS WAS DETD. FROM THE ABSORPTION OF THE 2537 ANGSTROM LINE IN HG VAPOR. THE EXPTL. DETD. CROSS SECTION EXCEEDS BY SIMILAR TO 20 TIMES THE CALCD. DATA (K. J. KATSUOKA, 1965; B. SHIRNOV, AND O. FIRSOV, 1965).

UNCLASSIFIED

USSR

UDC 621.387.3

VORONCHEVA, V.R., MAKAR-LIMANOV, G. YE., METLITSKIY, YU. YA. (Moscow Electrovacuum Devices Plant)

"Glow-Discharge Indicator Thyatron"

USSR Author's Certificate No 254663, filed 4 Apr 68, published 17 Mar 70 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11A142P)

Translation: A glow-discharge thyatron intended for information readout without breakdown is patented. Inside the container for the device there are arranged in series the cathode, three grids, and the recording anode in the form of an extended plate with a hole laterally offset in relation to the hole for the first grid. The solid plate of the recording anode shields from the observer both the luminescence of the preparatory discharge and the luminescence of the recording anode. The readout anode, which is placed behind the recording anode, can be made in the form of a disk located perpendicular to the surface of the recording anode, or in the form of a pin [shtyr'], or a ring. The readout anode is offset to the side of the hole in the recording anode. Reading of information is accomplished by the admission of signals to the readout anode, during which firing of the discharge only takes place with the existence of a discharge at the recording anode. Quenching of the discharge is achieved because of pulse supply. I.V.

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USSR

UDC 621.394.662.2(088.8)

VORONEL, V. L. ✓

"Device for Correcting the Phase with Discrete Control"

USSR Author's Certificate No 250206, Filed 8 Jun 68, Published 22 Jan 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D65P)

Translation: This author's certificate introduces a device containing an input unit, a reversing counter, a controlled divider and a master oscillator. In order to broaden the frequency tracking band, the controlled divider is executed in the form of two k and m bit counters, and a module for comparing the states of the counters is included between the reversing counter and the indicated counter for k bits. The output of this comparison unit is connected simultaneously to the counter input for m bits, and it is connected by a delay unit to the "clearing" input of the counter for k bits.

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USSR

UDC 621.396.622:621.382

VORONENKO, V.P., VYSTAVKIN, A.N., NAVROTSKIY, V.I.

"Concerning Frequency Conversion Of Millimeter And Submillimeter Bands Based On A Volumetric Semiconductor Nonlinear Element"

V sb. Poluprovodnikovyye pribory i ikh primeneniye (Semiconductor Devices And Their Application--Collection Of Works), Moscow, Izd-vo "Sovetskoye Radio," No 25, 1971, pp 329-356

Abstract: An analysis including theory is conducted of the operation of a mixer based on a volumetric inertial semiconductor nonlinear element, specifically of n-InSb at helium temperature. A computation is made of the conversion losses for some characteristics of the operating conditions of a mixer, taking account of the distribution of the field of the heterodyne and signal in the volume of the specimen, and various conditions of absorption of the heterodyne and signal. (A block diagram is shown of a device for measuring conversion losses.) An optimization of the material parameters is conducted. Preliminary results are given of an experimental investigation of an InSb converter in the 2- and 4-mm wave band. 7 fig. 1 tab. 20 ref.

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USSR

UDC 621.374.44

NAVROTSKIY, V. I., VIZEL', A. A., VORONENKO, V. P.

"Experimental Investigation of Frequency Multipliers Based on Semiconductor Diodes in the 18-70 GHz Frequency Range"

V sb. Polustrovochn. pribory i ikh primeneniye (Semiconductor Devices and Their Application--collection of works), Vyp. 23, Moscow, "Sov. radio", 1970, pp 246-260 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D26)

Translation: The authors give the results of an experimental investigation of some types of germanium and gallium arsenide diodes for the case of operation in the frequency doubling, tripling and quadrupling mode in various waveguide multiplier designs: "in-line", with parallel waveguides, and "crossed and overlapped." Relationships are given for the output power of the harmonics as a function of the input power and as a function of the input signal. Bibliography of twelve titles. Authors' abstract.

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UDJ 621.374.4.029.65:621.382.2

VIZEL', A.A., NAVROTSKIY, V.I., BERLIN, A.S., VORONINA, L.A., VORONENKO, V.P.

"Frequency Multipliers Based On GaAs Diodes For Millimeter Wavelengths"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1337-1339

Abstract: The results are presented of a study of frequency triplers and quadruplers of millimeter wavelengths (27-36 GHz) based on GaAs diodes. The subject of the study was diffusion diodes with junction capacitance $C_{jv} = 0.24-0.4$ pF, $T_{5v} = (C_{p-n} \cdot R_s) = 0.6-0.8$ nsec and a breakdown voltage of 40-60 v in an ordinary metalceramic casing; and also diodes with a metal-semiconductor barrier with $C_{0v} = 0.5-1.0$ pF, $T_{2v} = 0.5-0.8$ nsec and a breakdown voltage of 13-24 v (in a small-size metalceramic casing). The experimental study of the diodes was conducted in a frequency multiplier of the waveguide "cross overlap" (krest vnakhlest) type, with open circuits which have a high efficiency and a satisfactorily high output power. It is shown that on the base of GaAs diodes with a metal-semiconductor barrier and also of diffusion GaAs diodes it is possible to create effective frequency multipliers for millimeter wavelengths. The principal results of the work were reported at the 1971 European Microwave Conference. 3 fig. 3 ref. Received by editors, 9 September 1971.

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1/2 013 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--EFFECT OF THE POSITION OF AKLYL GROUPS ON THE RATE OF
BUTYLNAPHTHALENE OXIDATION -U-
AUTHOR-(02)-VORONENKOV, V.V., MUSABEKOV, YU.S.
COUNTRY OF INFO--USSR
SOURCE--NEFTEKHIMIYA 1970, 10(1), 64-7
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--OXIDATION RATE, NAPHTHALENE, CONJUGATE BOND SYSTEM, STERIC
HINDRANCE, UV ABSORPTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/1885 STEP NO--UR/0204/70/010/001/0064/0067
CIRC ACCESSION NO--/P0112865
UNCLASSIFIED

2/2 013

CIRC ACCESSION NO--AP0112865

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. RATE OF OXIDN. OF ALPHA (I) AND BETA,BUTYLNAPHTHALENES (II) WAS STUDIED IN A CLOSED SYSTEM AT 110DEGREES. THE CONSIDERABLY LOWER RATE OF OXIDN. OF I WAS EXPLAINED BY STERIC INHIBITION BY THE SIGMA, PI CONJUGATION OF THE OXIDIZED ALPHA CH BOND CAUSED BY AN OVERLAP OF VAN DER WAALS SPHERES OF THE ME GROUP WITH THAT OF THE PERI PROTON OF THE NAPHTHALENE NUCLEUS. EXISTENCE OF THE STERIC HINDRANCE OF THE SIGMA, PI CONJUGATION WAS FURTHER PROVED BY LOWER VALUES OF MOLAR REFRACTION AND INTENSITY OF UV ABSORPTION IN LONG WAVE REGION IN THE CASE OF I.

FACILITY: YAROSLAV. TEKHNOL.

INST., YAROSLAVL, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--REACTION OF CERUM (IV) WITH BETA DIKETONES -U-
AUTHOR--(U3)--VORONETS, L.S., YEFIMOV, I.P., PESHKOVA, Y.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 886-7
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL SYNTHESIS, ORGANOMETALLIC COMPOUND, CERUM COMPOUND,
KETONE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1993/0734 STEP NO--UR/0078/70/015/003/0886/0887
CIRC ACCESSION NO--AP0113598
UNCLASSIFIED

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CIRC ACCESSION NO--AP0113598
ABSTRACT/EXTRACT--(U) GP-0-
DIKETONES IN AQ. SOLNS.
OF THE REDN. DEPENDS ON
DURATION OF THE REACTION.
LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT. REACTION OF CE(IV) WITH BETA
IS ACCOMPANIED BY REDN. OF CE ION. THE DEGREE
REDOX POTENTIAL OF BETA DIKETONES AND THE
FACILITY: MOSK. GOS. UNIV. IM.

UNCLASSIFIED

USSR

UDC 616.981.49-022.39:599.323.41-036.22

VORONETS, N. P., DEMCHENKO, D. K., RODINA, K. YA., and RODIN, S. G.

"A Breslau Epizootic Among Norway Rats and Breslau Salmonellosis Among Humans"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 3, 1971, pp 145-146

Abstract: In the course of a minor outbreak of Breslau salmonellosis from 11 to 18 June 1969, a number of febrile persons with symptoms of gastroenteritis were admitted to the authors' hospital at the rate of 1 or 2 a day for 1 week. A pigsty and adjacent structures located in the area where the patients lived was found to be overrun with sick Norway rats. Several measures to exterminate the rats were taken and 4 days later the infection disappeared among the local inhabitants, with no new cases reported. Cultures isolated from both sick people and surviving and dead rodents proved to be identical in cultural, biochemical, and serological characteristics.

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Acc. Nr.: AP0040985

Ref. Code: UR 0094

USSR

UDC 628.977.1:621.3.078

VORONETSKIY, I. YA., GALICHENKO, G. I., MIN'KOVSKIY, B. Z.

"System for Automatic Voltage Maintenance in a Lighting Network"

Moscow, Promyshlennaya Energetika (Industrial Power Engineering), 1969, No 12, pp 30-31 (from Promyshlennaya Energetika, No 12, 1969, page 48)

Translation: A schematic is proposed for a stabilizing device which makes it possible to maintain the output voltage at a level of 215 ± 5 volts with feed voltage oscillations within the limits of 225-270 volts. The stabilizer is simple to manufacture and requires minimum maintenance. There is one illustration.

Reel/Frame
19750724

USSR

UDC 598.972.591.185.5

IL'ICHEV, V. D., VORONETSKIY, V. S., and GOLUBEVA, T. B., Moscow State University

"Sound Environment of the Long-Eared Owl and Spectral Sensitivity of Its Acoustic Nerve"

Moscow, Zoologicheskii Zhurnal, Vol 50, No 9, 1971, pp 1,358-1,368

Abstract: The sound environment of the long-eared owl consists of three components of unequal significance. The most important are the sounds emitted by objects of prey (squeaks and rustle of rodents), cries of nestlings and fledglings, and nuptial voices of adult owls. In order to perceive and locate these sounds, the owl's hearing must be very acute and highly discriminatory. Sounds of emergency, alarm, aggression, and other signals of communication, although also important, are easily perceptible. Sounds produced by trees, other plants, and nonbiological objects are of much lesser significance. The duration of biologically significant sounds is 0.05-0.90 sec, and the total frequency spectrum they cover ranges from 0.5 to 11.0 KHz. In the voices of adult owls, nestlings, and especially fledglings, the whole spectrum is broken into four to six frequency components separated by approximately equal intervals, due to which the voices have a harmonious quality. The

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USSR

IL'ICHEV, V. D., et al., Zoologicheskii Zhurnal, Vol 50, No 9, 1971,
pp 1,358-1,368

width of each component is 0.3-0.5 KHz in nestlings, 0.3-0.8 in fledglings, and 0.1-0.6 in adults, with intervals of 1.3-1.8, 0.8-2.0 and 0.2-0.5 KHz respectively. The voices of adult owls are spread over a narrower sound range than those of nestlings and fledglings. Records of action potentials from the auditory nerves have revealed that the cochlear receptors are most sensitive to sounds of 4-7 KHz. Those are the frequencies in which the owl is specialized to the highest degree (sounds emitted by rodents and fledglings). However, the spectra of all the biologically important sounds which have been investigated coincide with the owl's acute hearing range which includes frequencies up to 11 KHz.

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USSR

UNC 591.185+591.582.2:598.65

IL'ICHEV, V. D., GURIN, S. S., TENCHIN, A. N., and VORONENSKIY, V. S., Soil
Biology Faculty, Moscow State University

"Biological Signals and Functional Characteristics of the Pigeon Acoustic System"
Moscow, Zhurnal Obshchey Biologii, No 3, 1970, pp 268-275

Abstract: The frequency range, spectral and amplitude characteristics, duration, time intervals, and front of courtship cooing, threat and fledgling signals in pigeons were studied. All of these parameters, except the spectral ones, show great variability. The relationship between the amplitude of the cochlear potentials and evoked medullar, mesencephalic, and hemisphere potentials, on the one hand, and the parameters of acoustic signals; on the other, were also studied. A comparison of the above-mentioned parameters of the biological signals with conditioned reflexes and other functional characteristics of the acoustic system in pigeons failed to disclose any significant correlation. The reason for this may lie in the nature of the ecology of the pigeon, whose acoustic orientation does not require those systems to be carefully adjusted to each other. For example, unlike some other birds, the pigeon does not need to perceive and locate low-frequency sounds, because its biological signals are normally used in conjunction with vision.

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Polymers and Polymerization

USSR

UDC 678.027.74

VORONIN, A. A., and LAPITSKIY, V. A., Ukrainian Scientific Research Institute of Plastics, Donetsk

"Processing of Rapidly Solidifying Epoxy Compositions by the Method of Die Casting"

Kiev, Khimicheskaya Tekhnologiya, No 3 (63), May-Jun 72, pp 22-24

Abstract: It has been shown to be possible to process epoxy casting compositions (and epoxy press-materials) by means of pressure casting using the casting machines for reactive resins (Japanese made models "Matsuda" and "Meiki"). This process is suitable for die casting of a variety of products both for industrial and consumer application, or everyday consumption.

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UNCLASSIFIED

PROCESSING DATE--04DEC70

1/2 021
TITLE--THEORY OF EXCITATION TRANSFER IN COLLISIONS BETWEEN ALKALI ATOMS.

II. DISSIMILAR PARTNERS -U-

AUTHOR--(04)-DASHEVSKAYA, E.I., NIKITIN, E.E., VORONIN, A.I., ZEMBEKOV, A.A.

COUNTRY OF INFO--USSR

SOURCE--CAN. J. PHYS. 1970, 48(8), 981-92

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--EXCITATION ENERGY, PULSE EXCITATION, ALKALI, ATOM, DIPOLE INTERACTION, EXCITATION CROSS SECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1827

STEP NO--CN/0000/70/048/008/0981/0992

CIRC ACCESSION NO--AP0118791

UNCLASSIFIED

272 021

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0118791

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. POSSIBLE MECHANISMS ARE CONSIDERED FOR THE TRANSFER OF ELECTRONIC EXCITATION ENERGY IN COLLISIONS BETWEEN AN EXCITED ALKALI ATOM M SUBA SEXTILE (PRIME2 P SUBJ) AND AN UNEXCITED ATOM M SUBB (PRIME2 S SUBONE HALF). A DIPOLE DIPOLE INTERACTION WHICH IS RESPONSIBLE FOR THE TRANSFER OF ELECTRONIC EXCITATION ENERGY IN COLLISIONS BETWEEN IDENTICAL PARTNERS (M SUBA EQUALS M SUBB) IS NOT SUFFICIENT TO EXPLAIN THE OBSD. MAGNITUDES OF THE CROSS SECTIONS AND THEREFORE, THE EXCHANGE INTERACTION CAN NO LONGER BE NEGLECTED. IF THE EXCHANGE INTERACTION IS TAKEN INTO ACCOUNT, THERE ARE REGIONS OF NONADIABATICITY IN THE ENERGY DIAGRAM, WHICH ARE PROBABLY RESPONSIBLE FOR THE CHANGE IN THE ELECTRONIC ENERGY STATES OF THE COLLISION PARTNERS. THE CALCD. CROSS SECTIONS ARE COMPARED WITH EXPTL. VALUES. FAULTY: INST. TERR. MAGN., TONOS. RADIO WAVE PROPAGATION, MOSCOW, USSR.

UNCLASSIFIED

PORONIN, A. M.

Biochemistry

SECTION VI

Sci Selecte, Alcoholic L.

PC-29 Sept 71

Description:

(U) During this quarterly reporting period, five new articles were located from the Institute of Biochemistry and Physiology of Microorganisms at Pushchino. On the basis of these articles, it was possible to identify 13 new personalities with the Institute. The personalities, the subjects of the articles, and the dates are given below:

<i>Barin, M. Ya.</i>	<i>α-oxoglutaric acid</i>	1969 (65)
<i>Poronin, A. M.</i>	<i>antibiotic production</i>	1970 (66)
<i>Pliner, Ye. B.</i>	<i>condensed isopolymeric</i>	1971 (67)
<i>Kalashnikov, Z. A.</i>	<i>α-oxoglutaric acid</i>	1969 (65)
<i>Korol'skiy, B. Ya.</i>	<i>α-oxoglutaric acid</i>	1969 (65)
<i>Lyopitskiy, O. Ya.</i>	<i>α-oxoglutaric acid</i>	1970 (67)
<i>Mikhailov, S. R.</i>	<i>antibiotic production</i>	1970 (65)
<i>Pel'man, I. Zh.</i>	<i>α-oxoglutaric acid</i>	1970 (65)
<i>Pozomel'd, S. M.</i>	<i>cantharidin isopolymeric</i>	1971 (67)
<i>Slava, V. A.</i>	<i>α-oxoglutaric acid</i>	1971 (65)
<i>Takhtel'tseva, S. M.</i>	<i>α-oxoglutaric acid</i>	1971 (65)
<i>Yakovlev, Yu. D.</i>	<i>α-oxoglutaric acid</i>	1971 (65)
<i>Zakharov, P. B.</i>	<i>α-oxoglutaric acid</i>	1971 (65)

Two of the five new articles were authored by personalities already identified with the Institute of Biochemistry and Physiology of Microorganisms. One of these articles dealt with penicillium brown compactum (68) and the other with methane oxidizing bacteria (69). Reference 65 was jointly issued from the above Institute and the Institute of Microbiology Leningrad A. Kikhenshteyn Akts., possibly indicating some joint work between the two Institutes.

10
LINCI ASSIFIED

Nuclear Science and Technology

USSR

FRADKIN, G. M., BREZHNEVA, N. YE., YERSHOVA, Z. V., BOGDANOV, N. I. (Deceased), KODYAKOV, V. M., VORONIN, A. N., KOZLOV, A. G., MALYKH, YU. A., NIKIPELOV, B. V., RAGOZINSKIY, A. I., FEDOROV, V. V., and CHUSHKIN, YU. V., State Committee on the Use of Atomic Energy USSR, Fourth International Conference of the United Nations on the Peaceful Use of Atomic Energy, Geneva, 6-16 Sep 71

"Development of Isotopic Power Technology in the USSR"

Moscow, Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 358-365

Abstract: The construction in the USSR of isotopic thermoelectric generators for powering oceanographic and navigation devices, hydrographic, automatic radiometeorological, magnetic variation stations, high-elevation cosmic ray stations, and other scientific research stations and ground installations is reported on. The most suitable for fuel applications are isotopes with a half-life period within the limits 100 days to 100 years (approximately 50 isotopes), of which 12-15 can be obtained in large amounts. Most quantities of fission radioactive isotopes and also the most widely used radioactive Sr^{90} are obtained by processing radioactive waste solutions. To simplify isolation of radiochemically pure elements, including Sr^{90} , the group concentration method is used, based on calcium oxalate precipitation. The most promising technique is extraction separation of alkaline-earth elements with the isolation of pure strontium. Here the following extractants are used: a

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SR

FRADKIN, G.M., et al, Moscow, Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 358-365

solution of di-2-ethylhexylorthophosphoric acid in kerosene from a nitric acid medium, and a solution of salicylaldehyde in tributyl phosphate from an alkaline (sodium hydroxide or ammonia) solution. Currently construction has been completed for blocks with activities in the tens and hundreds of kilocuries based on Ce^{144} (20,000 curies), Sr^{90} (9000-100,000 curies), and Cs^{137} (50,000-150,000 curies), and also blocks based on Pu^{238} , Po^{210} , Cm^{242} , and Co^{60} . The thermal capacity of these blocks lies within the range 1-1000 watts. An empirical formula was derived and tested for the power yield in an isotopic (thermal) block. Also discussed is biological protection during development and construction of isotope power sources containing kilocurie amounts of radioactive heat. In dealing with the conversion of radioactive decay energy, the thermoelectric method was found to be most fully mastered at present: low-temperature semiconductor materials (up to 300°C) have been obtained with quite high efficiencies (5-8%), as well as medium-temperature (300-700°C) and high-temperature (higher than 700°C) semiconductor materials. Combining different materials in the form of cascade elements already permits attainment of 12-15% conversion efficiency in prototypes. Demands of minimum weight and size and also low background of attendant neutron and gamma-radiation led to construction of portable generators of the MIG-67 type based on Pu^{238} . The unique properties of Cm^{242} and Po^{210} (high specific power yield and fairly low-gamma-radiation intensity) made feasible construction of isotopic thermoelectric generators using cascaded converters with efficiencies of 8-10% in the 300-650°K range.

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USSR

FRADKIN, G. M., BREZHNEVA, N. YE., YERSHOVA, Z. V., BOGDANOV, N. I.,
(Deceased), KUDYUKOV, V. M., VORONIN, A. N., KOZLOV, A. G., HALYKH, YU. A.,
NIKIPELOV, B. V., RAGOZINSKIY, A. I., FEDOROV, V. V. and CHUSHKIN, YU. V.,
State Committee for the Use of Atomic Energy USSR

"Advancement of Research in the Field of Nuclear Power Engineering in the
USSR (Report Presented at the Fourth United Nations International Conference
on the Peaceful Uses of Atomic Energy held 6 to 16 September 1971 in
Geneva)"

Moscow, Atomnaya energiya, Vol 31, no 4, Oct 71, pp 358-365

Abstract: This report cites data on the Soviet development of the thermo-
electric generators designed for feeding oceanographic and navigation
devices, hydrographic, automatic, radiometeorological, magnetic variation
stations, high-mountain cosmic ray stations, and other scientific research
land stations. The report covers the scientific and technical fundamentals
of such energy sources and cites the characteristics of some generators.
Discussed in some detail are various aspects of radio isotopic fuels,
selection, properties, distinctive characteristics, evaluation, requirements,
cost factors, availability, handling safety factors, and forms of applica-

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FRADKIN, G. M., et al, Atomnaya energiya, Vol 31, no 4, Oct 71, pp 358-365

tion. The potential use of extraction separation of alkali-earth elements for obtaining pure strontium is noted. A table lists the comparative characteristics of various isotopes having potential use in thermoelectric generators. Much consideration is given to topics dealing with energy release in an isotopic unit, biological protection, radioactive decay energy conversion, thermal flow chart selection, and generator designs. Described and illustrated are some thermoelectric generators of various designations (using Ce^{144} , Cs^{137} , Sr^{90} , Pu^{238} , Cm^{242} (Po^{210})) including Beta-1, Beta-2, Beta-C, Efir, Penguin, MIG-67 (portable-type), and generators with cascade converters. (8 illustrations).

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- 53 -

USSR

UDC 577.1:615.7/9

VORONIN, A. P., IL'IN, V. P.

"Some Biochemical and Physiological Changes in the Organism of Workers in the Dye Shop of a Worsted Combine"

Ivanovo, V sb. Materialy I syezda epidemiologov, mikrobiologov, infektsionistov, gigiyenistov i san. vrachev Ivanov. obl.
(Materials of the First Conference of Epidemiologists, Microbiologists, Infectologists, Hygienists and Sanitation Medics of the Ivanovskaya Oblast--collection of works), 1971, pp 287-289 (from RZh-Biologicheskaya Khimiya, No 21, Nov 71, Abstract No 21F2184)

Abstract: It was found that people exposed to occupational contact with azo dyes for 2-6 years show a significant increase in the content of radical SH-groups and a reduction in the content of protein SH-groups in blood serum; differences in the content of overall SH-groups and the activity of aspartate- and alanine-aminotransferase of the blood serum are insignificant.

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USSR

UDC 669.046.5

RABINOVICH, Ye. I., ~~VORONIN, A. Ye.~~, and ZBOROVSKIY, A. A.

"Effect of Convective Mixing of the Melt on Oxide Impurities Distribution Along the Height of a Killed Steel Ingot"

Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISiS) (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys) Izd-vo "Metallurgiya," No 61, 1970, pp 54-57

Translation of Abstract: Results are presented of a mathematical analysis of the formation of nonmetallic impurities and their subsequent refining in steel in solidification in a mold. The nature of molten steel convective mixing during solidification and the distribution of oxides along the height of the killed steel ingot are described. 2 figures, 8 references.

Photoelectric Effect

USSR

UDC 621.383.292+621.383.52

BAZYLENKO, V. A., ~~VORONIN, E. S.~~, PROKOPENKO, V. Ye., STARKOV, G. S., Physics Department, Moscow State University

"On Selecting Photoreceivers for Reception of Weak Signals Against a Noisy Background"

Moscow, Pribory i Tekhnika Eksperimenta, No 4, Jul/Aug 71, pp 109-192

Abstract: The paper deals with the registration capacity of photoreceivers, which is defined as the minimum ratio of the signal power to the background power when the background is predetermined and the signal-to-noise ratio is equal to unity. Experimental data are given on the registration capacity of photomultipliers and photodiodes on wavelengths of 0.63 and 1.15 μ . Three types of photomultipliers with oxygen-silver-cesium cathodes (FNU-22, -62, and -83) and four types of germanium photodiodes (FD-1, -3, -3A and -6G) were studied. It was assumed that the photoreceivers have only shot noise. The emission source was a 170 W DC incandescent lamp. Curves are given for registration capacity as a function of operating conditions and quantum yield. It is found that the registration capacity of photodiodes on a wavelength of 0.63 μ at an emission power of 10 μ W is about 20 times as high as the registration capacity of a photomultiplier, the factor increasing to 100 for a

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USSR

BAZYLENKO, V. A., et al., Pribory i Tekhnika Eksperimenta, No 4, Jul/Aug 71,
pp 190-192

wavelength of 1.15 μ . In conclusion, the authors thank Yu. A. Il'inskiy and
V. S. Solomatin for constructive criticism and constant interest in the work.

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-105-

Acc. Nr:

AP0038027

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol. 58, Nr 1, pp 51-59

CONVERSION OF AN INFRARED IMAGE INTO A VISIBLE
IMAGE BY NONLINEAR OPTICAL METHODS

Voronin, F. S.; Divlekevev, M. I.; Il'inskiy, Yu. A.;
Solomatin, V. S.

Conversion of an image from the infrared to visible range in a nonlinear crystal is analyzed. The resolving power is estimated. Conversion from 1.06 to 0.53 microns in a KDP crystal is obtained; the resolving power is 8 lines per millimeter.

REEL/FRAME

19731068

2.1

GB

Instrumentation and Equipment

USSR

UDC 669.71.472(088.8)

VORONIN, E. YA., Siberian Department, Giprometallurgmontazh
Design Institute

"Device for the Recovery of Cathode Rods During Repair of
Aluminum Electrolytic Reduction Cells"

USSR Author's Certificate No 263165, filed 4 Jan 69, published
4 Jun 70 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11
G117 P)

Translation: A device is proposed for the recovery of cathode
rods during the repair of aluminum electrolytic reduction cells.
To mechanize the process of recovery of cathode rods and to
eliminate manual labor, the device contains a power-operated
runway, on which is mounted an electrical winch that moves in
the horizontal direction with the help of a cable hoist which
slides along a sliding beam attached to the power-attached run-
way. To compensate for horizontal forces, which appear in the
sliding beam during the recovery of cathode rods, the device is
equipped with brackets abutted against the wall of the cathode
casing.

1/1

1/2 017 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--CHEMICAL THERMODYNAMICS AND SOME PROMISING AREAS OF APPLICATION -U-
AUTHOR--(02)-GERASIMOV, YA.I., VORONIN, G.F. ✓
COUNTRY OF INFO--USSR
SOURCE--VESTN. AKAD. NAU, K SSSR 1970, 40(3), 50-6
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ENTHALPY, ENTROPY, THERMODYNAMICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/0823 STEP NO--UR/0030/70/040/003/0050/0056
CIRC ACCESSION NO--AP0116352
UNCLASSIFIED

2/2 017

CIRC ACCESSION NO--AP0116352

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. SOME EXPTL. METHODS FOR DETG.

ENTROPIES AND ENTHALPIES OF FORMATION OF DIFFERENT COMPS. ARE SURVEYED.

NO REFS.

UNCLASSIFIED

USSR

UDC: 621.396.6.017.72(088.8)

VORONIN, G. I., KUZNETSOV, I. D., MITROKHIN, V. M., MURAV'YEV, V. P.,
ZAKHAROV, V. S.

"A Device for Cooling Radio Electronic Equipment"

USSR Author's Certificate No 268440, filed 18 Oct 68, published 21 Aug 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V292 P)

Translation: A device is proposed for cooling electronic radio equipment. The device contains a closed loop filled with a coolant such as polymethyl siloxane. Connected in series in the loop are a pump and an air-liquid radiator with air collector. To improve the operating efficiency of the device, an evaporator is placed in series with the radiator and connected by tubing through a solenoid valve to a coolant-filled vessel. The evaporator is equipped with an ejector pump which is connected to a compressor through an air line with remote-control valve. Connected in the main air line of the air collector is a second remote-control valve. The control windings of the solenoid valve and the remote-control valves are connected to a control module which is connected in turn to temperature pickups in the closed loop and the air collector.

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1/2 033

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--TS DIAGRAM FOR AIR IN A RANGE OF TEMPERATURES FROM 20 TO
2400DEGREESK AND PRESSURES FROM 10 PRIME NEGATIVES ATM TO 40 ATM -U-
AUTHOR-(04)-VORONIN, G.I., ARKHAROV, A.M., ALENTYEB, O.A., KURAPOVA, L.N.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZVESTIYA VYSSHIKH UCHEBNYKH ZAVENDENIY,
MASHINOSTROYENIYE, NO. 1, 1970, PP 86-91
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--THERMODYNAMIC PROPERTY, AIR, GRAPHIC TECHNIQUE, TEMPERATURE
DEPENDENCE, ENTROPY, PRESSURE GRADIENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1985/0487

STEP NO--UR/0145/70/000/001/0086/0091

CIRC ACCESSION NO--AT0100963

UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0100963

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. DATA ON THE THERMODYNAMIC PROPERTIES OF AIR IN THE 20-2400 DEGREE K TEMPERATURE RANGE AND 10 PRIME NEGATIVE 8-40 ATM PRESSURE RANGE ARE SYSTEMATIZED AND PRESENTED IN THREE CHARTS. THE AUTHORS RELY HEAVILY ON PREVIOUS WORK BY OTHERS (FOR SPECIFIC RANGES) AND THEY NOTE THAT AVAILABLE EXPERIMENTAL DATA FOR AIR SHOW A GREAT DEAL OF DISPERSION WHEN COMPARED WITH DATA FOR PURE COMPONENTS. FOUR POSTULATES GOVERNING THE DERIVATION OF THE VALUES FOR THOSE RANGES DEALT WITH BY THE AUTHORS ARE GIVEN AND DISCUSSED BRIEFLY. THE AUTHORS CONCLUDE THAT THE TS DIAGRAMS PRESENTED CAN BE USED FOR ENGINEERING COMPUTATIONS. THEY NOTE, HOWEVER, THAT THE LIMITED SCOPE OF THE INITIAL DATA CAN LEAD TO ERRORS WHEN WORKING BEYOND AREAS OF TEMPERATURE AND PRESSURE COVERED BY EXPERIMENTALLY VERIFIED DATA. FACILITY: MOSCOW HIGHER TECHNICAL SCHOOL.

UNCLASSIFIED

Nickel

USSR

UDC 669.245.018.44(088.8)

PANASYUK, I. O., BRUSILOVSKIY, B. S., VILKOV, V. I., VORONIN, G. M., YEGOROV, YE. YE., YELKIN, I. S., KLIMOV, L. YA., KOVROVA, YE. A., KONISEVAYA, YE. M., LYUBINSKAYA, M. A., M' LENINA, YE. G., NEKHAYLOV, I. A., RAZUVAYEV, YE. I., SIROTKIN, A. I., SOLDATCHENKO, V. A., SPILITSIN, R. I., SHAPIRO, S. M.

"Nickel-Chromium Base Alloy"

USSR Author's Certificate No 276418, Filed 2 Jun 69, Published 16 Oct 70 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I766P)

Translation: The heat-resistant alloy has the following composition (in %): C 0.03-0.1, Cr 30-40, W 3-5.5, Mo 2-4, Ti 0.5-1.5, Al 0.5-1.5, Nb 0.5-1.5, Ce 0.01-0.3, B 0.003-0.008, Ni, the rest. The alloy has increased heat resistance and also the following mechanical and physical-chemical properties at 1,100°: σ_B 8 kg/mm², δ 65%, σ stress-rupture 1 kg/mm², coefficient of linear expansion $15 \cdot 10^{-6}$ deg⁻¹, increase in weight after 100 hours of heating at 1,200° in the air 0.6 g/m². It is corrosion-resistant in a moist atmosphere under tropical conditions, in sea water, and in the products of combustion of highly sulfurous fuel.

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VORONIN, G. V.

JP85 54767
22 DEC 1971

A FUNCTIONAL APPROACH TO IN VIVO MODELING OF BIOCHEMICAL SYSTEMS
UDC: 577.1.00.57

Article by G.V. Voronin, E.G. Larkiy, Institute of Neurology, USSR Academy of Medical Sciences, Moscow; Vsevolod Alekseyevich Medvedev, Moscow, Russian, No 11, 1971, pp 74-81]

In the last decade increasing use is being made of the method of mathematical modeling in the study of biochemical systems using analogue or digital electronic computers (computer modeling). Some of the results obtained by this method are indicative of its great potential in solving specific categories of biochemical problems. At the present time, monoenzyme systems and relatively simple systems of enzymes have been modeled in vitro (Corfinkel, 1967, 1968). Differential equations describing the dynamics of enzymatic conversions were generally used.

One can presently distinguish three "levels" of biochemical systems according to the criterion of complexity: 1) monoenzyme systems in vitro; 2) multienzyme systems in vitro; 3) multienzyme systems in vivo.

It is expressly the third level that is of special interest for those investigating the biochemistry of the intact organism, and in particular for clinical biochemistry. However, significant success obtained by the method of computer modeling is referable only to the first two levels thus far. This is quite understandable.

The construction of in vivo models of enzyme systems encounters a number of significant difficulties. One of them is the difficulty of extracting the required biochemical subsystem from the organism as a whole. The integrity of the organism finds expression in the interrelated and coordinated course of processes at all levels of its organization: molecular, cellular, tissue, organ, and systemic. At each of these, in turn, there are a number of interrelated regulatory and control subsystems [1]. Computation of the subsystem is also rendered difficult by the fact that various metabolic systems affect one another and there are multiple influences exerted on each enzyme in the organism [2]. Furthermore, the laws governing some in vivo biochemical conversions are not known. Thus, the law of mass action, on the basis of which differential equations describing the dynamics of enzymatic reactions are formulated is valid only for reactions that take place in true

VORONIN I.G.

Refractory Materials

USSR

BUGAYEV, N. P., SIMONOV, K. V., CHERNYAVSKAYA, V. P., KATSAV,
YE. V., VORONIN I. G.

"Refractories of Caustic Magnesite"

Moscow, Ornustroy, No 3, Mar 70, pp 2-3

Abstract: This article describes the experience in manufacture and service testing of magnesite refractories based on 0-4 mm fraction powder produced by roasting caustic magnesite without sintering additives. The experimental products were made using the technological process for the production of ordinary magnesite products and roasted at 1650°C. The properties of the roasted products are described. The deformation temperature under load is 800°C higher than that called for by the standards. Furnace tests showed that the experimental brick wears evenly during operation. The experimental refractories held up to usage as well as standard refractories.

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Hydrobiology

USSR

UDC 612.833.31

VORONIN, L. G., Chair of the Physiology of Higher Nervous Activity, Moscow State University

"The Behavior of the Sea Primate -- The Afaline Dolphin *Tursiops truncatus* Montagu"

Moscow, Uspekhi Sovremennoy Biologii, Vol 69, No 2, Mar/Apr 70, pp 191-207

Abstract: This is a review article with 54 references to experimental studies of dolphin behavior. Dolphins have probably the most highly developed higher nervous activity among the cetaceans. The most suitable methods for studying dolphin behavior are described. The views of various authors on the degree of development of higher nervous activity in dolphins are examined.

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USSR

UDC 612.821.6.001.5

VORONIN, I. G., Corresponding Member of the Academy of Sciences USSR, KONOVALOV, V. F., SERINA, R. YA., and SERIKOV, I. S., Institute of Biological Physics, Academy of Sciences USSR, Pushchino-na-Ok- River

"Correlation Between Electrographic Signs of Cerebral Processes and Short-Term Memory"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 1, 1971, pp 253-256

Abstract: The investigation was performed on 70 healthy children and adults aged 5-36 and 46 patients (cerebroscclerosis or alcoholism) whose bioelectrical currents were recorded (visual and motor cortex EEG, skin resistance, ECG, and EMG) while they were being exposed to auditory and visual stimuli and, the same time, the duration and the volume of their short-term memory was being determined by the answers they supplied to questions (asked at progressively longer intervals) as to what they had seen or heard, how much of it, and in what sequence. The period during which the initial signs of cerebral excitation caused by the emotionally indifferent stimuli persisted in the skin-resistance records was longer in children and patients than it was in healthy adults. The volume of short-term memory, on the other hand, was greatest in healthy adults. Thus, there is a reciprocal correlation between the persistence of

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USSR

VORONIN, L. G., et al., Doklady Akademii Nauk SSSR, Vol 201, No 1, 1971,
pp 253-256

the initial signs and the short-term memory volume. In small children, the power, flexibility, and balance of cerebral activity are not yet fully developed, while in patients with brain damage they are deteriorated; as a result, the initial signs are quenched with a delay. In healthy adults, the well-established cerebral activity as well as the properly functioning second signal system into which the information is transferred are responsible for both the quick quenching of the initial signs and short-term memory of greater capacity.

2/2

- 69 -

USSR

UDC 621.833.81

VORONIN, L. G., and KONOVALOV, V. F., Chair of Physiology of Higher Nervous Activity, Moscow State University imeni M. V. Lomonosov, and Division of Memory Problems, Institute of Biophysics, Academy of Sciences USSR, Pushchino-na-Oke

"Physiological Analysis of the Interaction Between Conscious and Unconscious Trace Processes During a Time Count"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova, Vol 20, No 5, Sep/Oct 70, pp 899-907

Abstract: The interaction of conscious and unconscious trace processes resulting from the pairing of acoustic, tactile, and proprioceptive stimuli with a light stimulus was studied by means of polygraphic records (EEG, SGR, oculomotor reactions). The light was switched on for 3 seconds every 6, 9, 15, and 30 seconds after the end of a conditioning stimulus lasting from 0.5-0.8 to 3 secs. It was found that a passive attitude on the part of the subjects toward the experiment caused formation of traces primarily at the level of the first signal system. Trace processes are therefore realized with difficulty or remain unconscious. Interaction between

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USSR

VORONIN, L. G., and KONOVALOV, V. P., Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova, Vol 20, No 5, Sep/Oct 70, pp 899-907

conscious and unconscious processes and their transition from one into the other are principally achieved with the subject's attitude to the experiment becomes active. The trace processes formed in the brain may be reproduced, based on the mechanism of a "biological clock" which may function at the level of both the first and second signal systems. When the subjects were passive or became drowsy, their biological clock functioned only at the level of the first signal system. Time perception is possible only with active analysis of the experimental scheme by the subjects and is based on the interaction of trace processes in the sphere of both signal systems.

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- 61 -

1/3 025
UNCLASSIFIED
TITLE--ELECTROPHYSIOLOGICAL DATA ON INTERACTION OF APPRECIATED AND
UNAPPRECIATED TRACE PROCESSES IN MAN IN ONTOGENESIS -U-
AUTHOR--(04)--VORENIN, L.G., KONOVALOV, V.F., GROMYKO, M.M., SERIKOV, I.S.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI, 1970, VOL 20, NR 2, PP
431-440
DATE PUBLISHED--70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ELECTROPHYSIOLOGY, EEG, MEMORY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/0352
STEP NO--UR/0247/70/020/002/0431/0440
CIRC ACCESSION NO--AP0132585
UNCLASSIFIED

2/3 025
 CIRC ACCESSION NO--AP0132585 UNCLASSIFIED PROCESSING DATE--20NOV70
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE OF THE DYNAMICS
 OF FORMATION AND INTERACTION OF TRACE PROCESSES IN CHILDREN AGED FROM
 FOUR TO SIXTEEN YEARS. IN THE FIRST SERIES OF EXPERIMENTS THE SUBJECT
 WAS INSTRUCTED TO OPEN HIS EYES AND PRESS THE BUTTON ONLY WHEN THE LIGHT
 WAS TURNED ON; IN THE SECOND SERIES, HE WAS TO REPRODUCE THE OPERATION
 AT THE MOMENT WHEN THE LIGHT WAS DUE TO BE SWITCHED ON; IN THE THIRD
 SERIES, HE WAS TO ACT BEFORE THE SWITCHING ON OF THE LIGHT. FORMATION
 OF TRACE REACTIONS WAS ACHIEVED WITHOUT DIFFICULTY IN THE SUBJECTS OF
 ALL AGE GROUPS. EEG REACTIONS, SGR, OCULO MOTOR AND MOTOR REACTIONS
 APPEARED BEFORE THE LIGHT WAS TURNED ON ALREADY IN THE FIRST EXPERIMENT.
 BY THE SECOND TO THIRD EXPERIMENT, THEY WERE STABILIZED AND COULD
 APPEAR IN 80-90PERCENT OF THE TRIALS. WHEN A CONSCIOUS EVALUATIONS OF
 THE TRACE PAUSE WAS DUE (SECOND SERIES OF EXPERIMENTS) THE MOMENT OF THE
 APPEARANCE OF THE LIGHT WAS UNDERESTIMATED IN MOST OF THE CASES. IN
 THE THIRD SERIES OF EXPERIMENTS, WHEN THE SUBJECTS WERE TRYING TO ACT
 BEFORE THE LIGHT WAS SWITCHED ON, UNDERESTIMATION OF THE TIME WAS
 RECORDER ONLY IN CHILDREN OF FOUR TO EIGHT YEARS OLD. THE 14 TO 16 YEAR
 OLD SUBJECTS EXACTLY EVALUATED THE INTERVAL BY COUNTING. HOWEVER, IN
 SPITE OF THESE UNDER AND OVER ESTIP TEST, THE EEG RESPONSES SGR AND OTHER
 REACTIONS APPEARED AT THE POINT OF THE ACTION OF THE SIGNAL (WHEN IT WAS
 OMITTED) OR BEFORE ITS SWITCHING ON. A CONCLUSION IS DRAWN THAT TRACE
 PROCESSES IN FOUR TO EIGHT YEAR OLD CHILDREN ARE FORMED MAINLY AT THE
 LEVEL OF THE FIRST SIGNAL SYSTEM, AND IN 14 TO 16 YEAR OLD SUBJECTS, AT
 THE LEVEL OF BOTH SIGNAL SYSTEMS.

UNCLASSIFIED

3/3 025 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC-ACCESSION NO--AP0132585
ABSTRACT/EXTRACT--FACILITY: DEPARTMENT OF MEMORY PROBLEMS, INSTITUTE OF
BIOPHYSICS, USSR ACADEMY OF SCIENCES, PUSCHINO-ON-OKA.

UNCLASSIFIED

USSR

UDC: 612.821.6.001.5

VORONIN, L.G., Corresponding Member, Academy of Sciences, and NETOPINA, S.A.
"Age Characteristics in the Formation of Systems of Conditional Connections
With Different Degrees of Information"

Moscow, Doklady Akademii Nauk SSSR, Vol 191, No 2, Mar 70, pp 490-492

Abstract: A series of experimental problems were devised, whose solution depended upon comprehension of the information or instruction, and upon the formation of a system applicable to the situation. The subjects were pupils from grades 1-10. The problems consisted of insertion of lamp plugs into their proper outlets, with different plugs for different outlets. The time it took to solve the problem was the measure of systemic development. From grades 1-10 solution took: 28, 20, 19.5, 16, 16.2, 16.6, 15, 12, and 10. min. In other series the results were similar. The plateau in the case of grades 5-7 is the period of experimentation. Generally the young pupils tried to solve the problems without any system, and frequently they got into blind alleys, whereas the older pupils already have an idea of a system, and they usually remember their own correct and incorrect acts. With the development of the nervous system, there is also growth of inner information, which readily absorbs and organizes the information from outside. These are ontogenetic processes.

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USSR

UDC 612.833.81

VORONIN, L. G. and NETOPINA, S. A., Moscow State University

"Formation of Complex Systems of Temporary Connections in Children Supplied With a Minimum Amount of Information"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti, No 3, 1970, pp 563-568

Abstract: The experiment was performed on school children 7 to 17 years of age in grades 1 to 10 (5 per grade), seated at a panel with buttons numbered from 1 to 25 and a board with corresponding bulbs. The only information provided was that two bulbs had to be turned on using all the buttons. A bulb could be turned on by pressing a button, by a series of actions, or by turning another off. Three logical decisions were involved - "or," "and," "no." None of the first to fourth graders was able to solve the problem, but many could determine the individual connections between the signals and actions and the tactics varied considerably among the subjects from "conservative" to planned." The older the subject, the more varied was his planning and the fewer his random actions. Those who solved the problem included one from the 5th, 6th, 8th, and 9th grades each, two from the 7th grade, and three from the 10th grade (total of nine). Thus, age is a prime factor in solving a mental problem involving minimum information.

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1/2 019
UNCLASSIFIED
TITLE--FORMATION OF COMPLEX SYSTEMS OF TEMPORARY CONNECTIONS IN CHILDREN
SUPPLIED WITH MINIMUM INFORMATION -U-
AUTHOR--(02)-VORONIN, L.G., NETOPINA, S.A.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI, 1970, VOL 20, NR 3, PP
563-568
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, BEHAVIORAL AND SOCIAL
SCIENCES
TOPIC TAGS--NEUROPHYSIOLOGY, CHILD PSYCHOLOGY, LEARNING THEORY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1997/1918
STEP NO--UR/0247/70/020/003/0563/0568
CIRC ACCESSION NO--AP0120570
UNCLASSIFIED

2/2 019

CIRC. ACCESSION NO--AP0120570

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DYNAMICS OF THE ESTABLISHMENT OF CONDITIONED CONNECTION SYSTEMS IN THE FORM OF FORMAL LOGICAL DEPENDENCES OF NEGATION, DISJUNCTION AND CONJUNCTION WAS STUDIED IN 50 SCHOOL CHILDREN OF THE 1ST TO 10TH FORMS (FIVE FROM EACH FORM), WITH AN INSTRUCTION CONTAINING MINIMUM INFORMATION. THE SUBJECT WAS INFORMED ABOUT THE ULTIMATE TASK ONLY, I.E. THE TASK TO SWITCH ON TWO LAMPS USING 25 BUTTONS. THE FORMATION OF THE ENTIRE SYSTEM OF TEMPORARY CONNECTIONS WAS RECORDED ONLY IN PUPILS OF THE INTERMEDIATE AND SENIOR SCHOOL AGE GROUPS (ONE FROM THE 5TH AND 6TH FORM EACH, TWO, FROM THE 7TH AND ONE FROM THE 8TH AND 9TH EACH, AND THREE FROM THE 10TH FORMS). VARIOUS DEGREES OF ESTABLISHING INDIVIDUAL CONNECTIONS AND DEPENDENCES WERE OBSERVED AMONG THE CHILDREN OF JUNIOR FORMS. THEY WERE ALSO NOTED FOR MORE DISORDERLY AND RANDOM ACTIONS, THAN SENIOR PUPILS BEGINNING WITH THE 5TH FORM. A SUBSTANTIAL DIFFERENCE ALSO CONSISTS IN THE DIFFERENT DEGREE OF COMBINATIONAL ACTIONS IN PUPILS OF DIFFERENT FORMS. THIS POINTS TO AGE PECULIARITIES OF THE ANALYTICAL SYNTHETIC ACTIVITY OF THE NERVOUS SYSTEM. FACILITY: CHAIR OF PHYSIOLOGY OF HIGHER NERVOUS ACTIVITY, LOMONOSOV UNIVERSITY, MOSCOW.

UNCLASSIFIED

USSR

UDC 612.821.6

VORONIN, L. G., Chair of the Physiology of Higher Nervous Activity, Moscow State University imeni M. V. Lomonosov, and Department of Memory Problems, Institute of Biophysics, Academy of Sciences USSR, Pushchino-na-Oke

"Some Data on the Relationship Between Conscious and Unconscious Reactions"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova, Vol 22, No 4, Jul/Aug 72, pp 669-678

Abstract: The ability to judge time -- intervals of 15, 30, and 60 sec -- was investigated in 150 subjects, including normal, healthy individuals aged 5-35 and patients suffering from chronic alcoholism, cerebral sclerosis, and impaired memory. Light and sound stimuli were delivered at equal intervals while GSR (galvanic skin response), EEG, and EKG were being recorded. Changes in the GSR and other records coinciding with the stimulus represented unconditioned reflexes. Soon, in conscious and unconscious anticipation of the successive stimuli, conditioned reflexes developed, as indicated by similar shifts appearing in the GSR at approximately (but not always exactly) the moment the next stimulus was to (but did not) occur. These conditioned reactions or traces persisted for variable periods. For conscious evaluation of time, the subjects were to press a button at the moment they expected the next stimulus

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USSR

VORONIN, L. G., Zhurnal Vysshey Nervnoy Deyatel'nosti Imeni I. P. Pavlova, Vol 22, No 4, Jul/Aug 72, pp 669-678

to be delivered. To disrupt their mental counting of the seconds, they were sometimes given special instructions which absorbed their attention. Analysis of the records revealed that the reactions disappeared after 8-18 stimuli. Reactions disappeared faster in adults, in whom nervous processes are well balanced, and persisted longer in young children and patients, in whom inhibition is weak and nervous processes in general are more inert. In additional tests it was established that memory (which is preservation of information imprinted in the brain) was inversely proportional to the duration of the recorded traces. That inverse correlation is explained by the conclusion that the process of imprinting is accompanied by irradiation of the excitation, giving rise to GSR and other reactions. As the process of imprinting is accomplished and the association simplified, the accompanying phenomena disappear. The relationship between conscious and unconscious reactions is based on that between Pavlov's first and second signal systems. Both are determined by overall mental and emotional development and by the presence of neuropathological changes. If the specifically human second signal system does not lead in the process, voluntary estimation of time intervals is difficult. Characteristically, it is underestimated by younger children and patients with neuropathology, and it is overestimated by older children and adults.

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USSR

UDC 612.822.3

VORONIN, I. I. and KOZHEDUB, R. G., Electrophysiology Laboratory, Institute of the Brain, Academy of Medical Sciences USSR, and Laboratory of the Evolution of Trace Processes, Institute of Biophysics, Academy of Sciences USSR, Pushchino-on-Oka

"Cellular Analog of a Conditioned Reflex to Electrical Stimulation of the Cerebral Cortex. Analysis of Spike Activity"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti, No 4, 1971, pp 775-783

Abstract: The possibility of creating a cellular analog of a conditioned reflex was investigated in the sensorimotor cortex of alert rabbits. Spike activity of individual neurons was analyzed. Stimulation through surface cortical electrodes placed 2.5 to 12 mm from the point of implantation of the recording microelectrode served as a conditioned stimulus. Stimulation through nearby electrodes was used as an unconditioned reflex. Most of the neurons exhibited a marked intensification of the excitatory response to the conditioned stimulus after short (1 to 5 sec) intervals between presentations and fairly strong and prolonged unconditioned stimulation. However, such intensification was brief (less than 30 sec) and was generally an analog of a 1/2

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VORONIN, L. I. and KOZHEDUB, R. G., Zhurnal Vysshey Nervoy Deyatel'nosti, No 4, 1971, pp 775-783

pseudoconditioned reflex rather than that of a conditioned reflex because it did not require any pairings and appeared after one or more presentations of the unconditioned stimulus. Nine of 21 neurons for which longer intervals between pairings were employed (7 to 120 sec) showed "unconditioned" changes consisting of the appearance of (or change in) the response to the conditioned stimulus (and its subsequent "extinction") or appearance of the response at the time corresponding to the omitted unconditioned stimulus.

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VORONIN, L.M.

UTILIZING THE REACTOR INSTALLATIONS AT THE NOVO-VORONEZH
ATOMIC ELECTRIC POWER PLANT

Excerpts from Russian-language book by P. Ya. Ovchinnikov, L. M. Voronin, L. I. Golubev, et al.: Eksploataatsiya Reaktorov i
Dostavka Novo-Voronezhskoy AES, 1972, Atomizdat, Moscow, pp 1-78.

JPRS 59461
9 July 1973

(3)

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(I - USSR - R)

USSR

UDC 621.372.6

VORONIN, M. YA., MASHARSKIY, YE. I., Active Members of the Scientific and Technical Society of Radio Engineering, Electronics, and Communications

"Resistance Matrices of Connected Nonuniform Symmetric Band Lines"

Moscow, Radiotekhnika, Vol 26, No 10, 1971, pp 84-87

Abstract: On the basis of the paper by Yasonoto, et al. ["Microwave Theory and Technology," Trans. IEEE, No 4, 220-231, 1967], formulas are derived for the resistance matrix elements of connected exponential, parabolic and hyperbolic nonuniform band symmetric lines. The resistance matrices obtained offer the possibility of calculating the required parameters of filters and directional couplers based on connected exponential, parabolic and hyperbolic symmetric band lines.

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USSR

UDC: 621.372.413:621.372.2

VORONIN, M. Ya., MASHARSKIY, Ye. I.

"Equivalent Capacity of a Tank Circuit Made of a Section of Strip Line"

Tr. Novosib. elektrotekhn. in-ta (Works of the Novosibirsk Electrical Engineering Institute), 1970, vyp. 2, kn. 1, pp 99-112 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6B163)

Translation: The authors calculate the equivalent capacity of oscillatory systems made up of sections of nonhomogeneous exponential, parabolic and hyperbolic lines loaded by the input capacitance of a tube. The advantages of these systems over those made up of sections of homogeneous line are pointed out. Nine illustrations, bibliography of seven titles. N. S.

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USER

UDC: 621.396.626.3

ANDRONOV, I. S. and VORONIN, N. N.

"Noise Immunity of Scattered Reception With Threshold Antenna Switching"

Moscow, Radiotekhnika, No 10, 1972, pp 1-7

Abstract: The interest in scattered reception with threshold antenna switching is explained by the fact that no increase in receiver and demodulation equipment is required to realize this method. Asserting that other investigators have not understood the noise immunity of which this method is capable, the authors provide an analysis of this immunity in an actual circuit of scattered reception with antenna switching in several cases of practical interest. Especial attention is given to the noise immunity in the reception of binary signals, orthogonal in the amplified sense of the term, with active pauses, in statistically uniform and nonuniform scattering and with Rayleigh-independent fading. The effect on the immunity of the amplitude of the threshold level is also examined. For the purposes of the analysis, the authors use the mathematical model of the k-th antenna signal for the duration of one signal element. It is assumed that the period of the antenna switching is $1/2$

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ANDRONOV, I. S., et al, Radiotekhnika, No 10, 1972, pp 1-7

a multiple of the signal element duration and that the switching is synchronous with the first element of the signal that arrives. The authors find that under real conditions, this method of reception permits increased noise immunity at low additional expense for equipment.

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- 6 -

Superalloy

USSR

UDC 621.9.015.74:669.018.25.004.6

MAKAROV, A. D., MUKHIN, V. S., and VORONIN, N. V.

"Hard-Alloy Tool Wear in the Cutting of Heat-Resistant Alloys"

Moscow, Stanki 1 Instrument, No 2, Feb 74, pp 26-28

Abstract: Results of investigating the microstructure, microhardness, and chemical composition of the tool material (alloy VK6M) in the zone of chamber wear on the trailing surface are presented using as an example the EP220 Ni-Cr-Co alloy. These studies showed that distribution of cobalt from the alloy being machine and tungsten from the cutting tool vary with cutting speed and time of contact of the tool against the machined part due to diffusion from adhesion contact. Low-speed cutting causes tool wear due to the forces of adhesion which tear and carry particles off from the hard alloy that were weakened by fatigue phenomena. Here the zone of greatest wear was located at some distance from the cutting edge. High-speed cutting also causes tool wear due to mutual diffusion dissolution of the tool and machined materials. The lowering of tool wear intensity with increased cutting speed up to an optimum value v_0 can be explained by the decrease of

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MAKAROV, A. D., et al., Stanki 1 Instrument, No 2, Feb. 74, pp 26-28

adhesion and fatigue phenomena, and the increased intensity of wear at
v > v was caused by the amplification of mutual diffusion dissolving of
the tool and machine materials. Six figures, seven bibliographic references.

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USSR

UDC: 621.372.543(088.8)

VORONIN, O. V., KOL'TSOV, Yu. V.

"A Low-Frequency Filter"

USSR Author's Certificate No 264561, filed 26 Aug 68, published 22 Jun 70
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D90 P)

Translation: This Author's Certificate introduces a transistorized low-frequency filter in a voltage amplifier circuit with negative feedback from the output to the input of the amplifier through a CCR T-bridge. To obtain a frequency response with a predetermined nonuniformity in the passband, and maximum slope of attenuation beyond the limits of the passband of the filter, two RRC and CCR T-bridges are connected ahead of the amplifier so that the inputs of the bridges are connected together and are the input of the filter; the output of the RRC bridge is connected to the input of the amplifier, and the output of the CCR bridge acts as the third element (capacitance) of the RRC bridge.

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USSR

UDC 621.396.6-181.5

VORONIN, P. V., KORZO, V. F.

"Microwire Resistance Welding in Miniature Elements of Instrument Building"

V sb. Mikroprovod i pribory soprotivl. (Microwire and Resistance Devices --collection of works), vyp. 7, Kishinev, 1971, pp 335-337 (from RZh--Radiotekhnika, No 8, Aug 71, Abstract No 8V229)

Translation: The paper points out the disadvantages of glued joints as applied to the hanging elements of microcircuits. A method is described for fastening vitrefied resistors to microwire by means of resistance welding with microwire of small cross section. The optimum contacting conditions are determined by testing. A technique for making intersecting leads is considered. One illustration, one table, bibliography of four titles. N. S.

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USSR

UDC 621.357.1.035(088.8)

VORONIN, T. I., IVANOV, YU. S., and REDIKUL'TSEV, YU. V., All-Union Scientific Research Biotechnological Institute

"Reactor Electrolyzer"

USSR Patent Certificate No 312869, Filed 4 Apr 70; Published 22 Nov 71 (from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom, No 23(II), 1972, Abstract No 231222P)

Translation: A reactor-electrolyzer is patented, which can be used, for example, for the cultivation of the water-oxidizing bacteria. The electrolyzer consists of electrodes situated along the longitudinal cell axis, with a gap between them to facilitate the mixing of the culture medium. This location of electrodes produces higher yields of O_2 and H_2 during the electrolysis and the mass exchange process is intensified.

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USSR

VORONIN, V. A., KHAYKIN, N. SH.

UDC 621.376

"Band Electro-optical Modulator for the Range up to 1 gigahertz"
Moscow, Pribory i Tekhnika Eksperimenta, No 6, 1971, pp 153-155

Abstract: The structural design and basic characteristics of a band electro-optical modulator based on high-resistance GaAs are presented. The frequency dependence of the modulation coefficient was measured in the video range. A formula is presented for calculating the critical load frequency. To increase the controlling power it is necessary to increase the load dimensions which in accordance with this formula leads to a decrease in the critical load frequency. The static transmission characteristic, the standing wave coefficient and the frequency characteristic of the optical modulation coefficient were measured. A formula is presented relating the synchronous detector readings to the optical modulation coefficient.

On the basis of the modulator a device with a CO_2 -laser was manufactured to take the frequency sensitivity characteristics of radiation receivers sensitive to a wavelength of 10^6 microns. The device operates in the modulation frequency band up to 1 gigahertz.

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VORONIN, V.A.

JRS 57517
15 Nov 72

- 139 -

EFFECT OF FREON-114B2 ON THE ACTIVITY OF ISOENZYMES OF LACTATE DEHYDROGENASE
UDC 577.136.347.01.04
[Article by I. A. Tsimov, V. A. Voronin, A. A. Denisov, L. A. Litnucheva
and T. S. Kolesovskaya, Moscow, *Nosichovskaya Biologiya i Meditsina*, Russian,
Vol. 9, No. 5, September-October 1972, pp. 87-89, submitted for publication,
16 December 1971]

The literature contains information on the possibility of atmospheric contamination of closed spaces by chemical substances emanating from mechanical and technical apparatus and different systems (Kleodnon; V. V. Kulov and L. A. Tsimov; Siegel). In particular, the attention of researchers has been drawn to the study of freons. For example, the presence of freon-114B2 in the air of American spacecrafts has been noted by Kozlov, Anderson and Sanders. It is emphasized that upon contact with heated surfaces the freon decomposes, forming hydrogen chloride and fluoride, the traces of which are dangerous to life. A. Tsimov and M. A. Barzani (Moscow) study of the biological effect of freon-114B2 and the products of its decomposition is a timely problem.

The toxic effect of freon-114B2 has been studied by B. D. Karpov, A. I. Kordakov, et al. A relatively low toxicity, presence of a narcotic effect, and danger of products of pyrolytic decomposition have been noted (Novitskiy). Taking into account that the narcotic effect is accompanied by hypoxia and accumulation of lactic acid in cerebral tissues (A. V. Pilyadin and B. I. Khavkina), in the case of intoxication by freon-114B2 one can expect changes in lactate dehydrogenase activity, since an excess of the substrate results in a considerable inhibiting effect on this enzyme (Kubovitz and Ott; Octolenghi and Denegedi).

A change in lactate dehydrogenase activity was registered in erythrocytes by carbon monoxide (L. A. Tsimov and V. V. Kuznetsov; Pecora, et al.) and lead (Quattrini and Caiola). A change in the isoenzymes of lactate dehydrogenase has been described during hypoxia caused by an oxygen shortage (Yu. A. Yurlov) and in poisoning by styrene (Klein, et al.).

USSR

UDC: 535.2+535.317.1

STASEL'KO, D. I., VORONIN, V. B., SMIRNOV, A. G.

"Holographic Method of Measuring Spatial Coherence Functions"

Leningrad, Optika i Spektroskopiya, Vol 34, No 3, Mar 73, pp 561-566

Abstract: The authors evaluate the accuracy and resolution of a holographic method of measuring functions of spatial coherence. It is shown that the method can be used to measure the complete spatial coherence function of a laser with a precision competitive with that of conventional interference methods without sacrificing spatial resolution. The method is used to study the spatial coherence of a pulse ruby laser. It is found that the field of emission on the end of the laser in multimode operation is coherent within each of the intensity spots, and that the coherence function is "stepped". The authors thank Yu. N. Denisyuk and G. V. Papayan for discussing the work.

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USSR

UDC: 681.327.11

VAL'KOV, V. M., ABATUROV, S. S., MIKHAYLOV, V. I., VORONIN, V. F.

"A Device for Data Output by Means of Speech"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 22, 1970, Soviet Patent No 275520, Class 42, Filed 3 April 1969, p 117

Abstract: This Author's Certificate introduces a device for data output by means of speech. The device contains a memory unit connected to an electric motor, an arbitrary word-sampling circuit, and a playback amplifier connected to a loudspeaker. As a distinguishing feature of the patent, the device is simplified by making the memory unit in the form of magnetic drums of different diameters and connecting the outputs of the readout head units through commutators on the different steps to a balancer whose output is connected to the playback amplifier.

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USSR

UDC 621.375.8

VORONIN, V. F., BRIBKOVSKIY, V. P., and SAMOYLYUKOVICH, V. A.

"Correlation Between Internal Differential Quantum Yield of Generation and Near Field Picture of Injection Lasers"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 14, No 3, Mar 71, pp 531-533

Abstract: The correlation of the near field picture with the differential internal quantum generation yield is experimentally established. In diodes made of the same material and having the same dimensions the more homogeneous the near field picture, the greater the quantum yield of generation. Tests were performed with a series of 22 GaAs diffusion diodes at liquid nitrogen temperature with generation excited by pulses of current 1 μ sec in length with a pulse repetition frequency of 60 Hz.

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USSR

UDC 615.28:547.789.6

RUDZIT, E. A., LUK'YANOV, A. V., VORONIN, V. G., KULIKOVA, D. A., and
RADKEVICH, T. P., All Union Scientific Chemical Pharmaceutical Research
Institute imeni S. Ordzhonikidze, Moscow

"Antimicrobial Activity of Benzothiazolequinones"

Moscow, Farmakologiya i Toksikologiya, Vol 34, No 3, May-Jun 71, pp 350-352

Abstract: Antimicrobial activity of 2-substituted 4-dialkylaminobenzothiazolequinones-6,7, 6-hydroxybenzothiazolequinones-4,7, and 2-substituted-6-hydroxy(methoxy)-benzothiazoles was studied. It was determined that none of the 2-substituted 5-hydroxy(methoxy)benzothiazoles, 6-hydroxybenzothiazolequinones-4,7, nor their 5-halo or 5-piperidinomethyl substituted analogs possessed any antimicrobial activity. Only the benzothiazolequinones-6,7 with nitrogen-containing substituents in positions 2 and 4 showed bacteriostatic (including tuberculostatic) and some mycostatic activity.

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USSR

UDC 621.315.593:535.376

YEREMIN, V.G., GLUKHAREV, A.A., PAVLICHENKO, V.I., PRONIN, B.V., RYZHIKOV, I.V.,
SULEYMANOV, YU.M.

"Effect Of Adhesion Centers On Electroluminescence In α -SiC(6H)"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Technology.
Scientific-Technical Collection. Semiconductor Devices), 1970, No 3(53), pp 24-30
(from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B282)

Translation: The relaxation was investigated of electroluminescence in silicon carbide p-n junctions constructed on silicon carbide (6H) crystals of a modified version of different resistivity. On the basis of the energy levels of the traps obtained (0.06-0.08; 0.13-0.14; 0.18-0.20; 0.22-0.23 e.v.) it is assumed that three levels of nitrogen emerge as adhesion centers in silicon carbide α -SiC(6H), and also one level of unknown donor, which under stable conditions in material of high resistivity is not filled by electrons. 6 ill. 26 ref. Summary.

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Nitrogen Compounds

USSR

UDC 615.28:547.5677.012

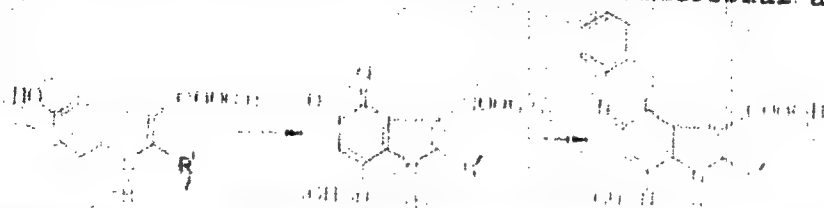
LUK'YANOV, A. V., RUDZIT, E. A., ALESHINA, V. A., VORONIN, V. G.,
RADKEVICH, T. P., KULIKOVA, D. A., LISITSA, L. I., and TSIZIN, YU.
S., All-Union Scientific Research Chemicals Pharmaceutical Institute
imeni Sergo Ordzhonikidze, Moscow, Ministry of Health USSR

"Study of Heterocyclic Quinones. XV. Synthesis and Antimicrobial
Action of Substituted Indolequinones-4,5"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 4, No 7, 1970,

Abstract: In earlier reports the authors showed that several hetero-
cyclic quinones can be obtained by oxidation of the corresponding
phenols with oxygen in the presence of a Cu^{2+} -secondary amine com-
plex. The present report describes the use of this method for
oxidation of 5-oxyindoles (I) and the study of the structures of
the resulting compounds (II) and their antimicrobial action.

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USSR

LUK'YANOV, A. V., et al., Khimiko-Farmatsevticheskiy Zhurnal, Vol 4, No 7, 1970, pp 16-20

a) CH_3 b) C_6H_5 c) $-\text{CH}_2\text{CH}_2-$ d) $-\text{CH}_2\text{CH}_2-$ e) $-\text{CH}_2\text{CH}_2-$
f) $-\text{CH}_2\text{CH}_2-$ R' CH_3 (a-f) g) R' CH_3

It was established that all compounds tested are inactive toward tuberculosis bacillus, gram-negative bacteria, and fungi. Of correlations existing between structure and action, the following were noteworthy: 1) all tested 5-oxyderivatives of 2-methyl(or phenyl)-3-carboethoxyindole (Ia-I) do not suppress bacterial growth. 2) Antibacterial activity toward gram-positive microorganisms is exhibited by 2-methyl-3-carboethoxy-7-piperidinoindolequinones-4,5 containing an aryl substituent at N_1 (IIb-IIIf). 3) Phenazine derivatives (IIIa-IIIIf) of o-quinones (IIa-IIIf) do not exhibit antibacterial action. Results of this study show the value of searching for new antibacterial preparations among the new series of o-quinones of 2-methyl-3-carboethoxy-7-piperidinoindole.

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UNCLASSIFIED
PROCESSING DATE--13NOV70
TITLE--HETEROCYCLIC QUINONES. ANIMATION OF 6-HYDROXYBENZOTHAZOLE DURING
OXIDATION -U-
AUTHOR-(U3)-LUKYANOV, A.V., VORONIN, V.G., TSIZIN, YU.S.
COUNTRY OF INFO--USSR
SOURCE--ZH. VSES. KHIM. OBSHCHEST. 1970, 15(2), 238-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--HETEROCYCLIC BASE COMPOUND, QUINONE, HYDROXYL RADICAL,
THIAZOLE, OXIDATION, ANINE, MORPHOLINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1060
STEP NO--UR/0053/70/015/002/0238/0239
CIRC ACCESSION NO--AP0128487
UNCLASSIFIED

2/2 013

CIRC ACCESSION NO--AP0128487

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/FXTRACT--(U) GP-0- ABSTRACT. AGITATING 0.5 G CUIOACI SUB2 IN 100 NL MECH AND 0.4 MOLE R SUB2 NH WITH 15.1 G APPROPRIATE 6, HYDROXYBENZOTHAZOLE IN G ATM. AT 20DEGREES RESULTED IN AN EXOTHERMIC REACTION (TO 35-40DEGREES) WHICH TOOK UP SIMILAR TO 4.5 L. O AND GAVE THE FOLLOWING I (R SHOWN): PIPERIDINO, DECOMPD. 169.5-70DEGREES; NME SUB2, DECOMPD. 161.5-2.5DEGREES; AND MORPHOLINO, DECOMPD. 132-3.5DEGREES. IF THE STARTING BENZOTHAZOLE CONTAINS AN ARYL GROUP IN THE 2 POSITION, THE ADDN. OF SECONDARY AMINES FAILED, POSSIBLY OWING TO STERIC FACTORS. THE REACTION OF ADDN. PUTATIVELY PASSES THROUGH II AS AN INTERMEDIATE. FACILITY: VSES. NAUCH. ISSLED. KHIM. FARM. INST. IM. ORDZHONIKIDZE, MOSCOW, USSR.

UNCLASSIFIED

VORONIN, V. I.

RM 18-960/5-11-11-73
Rev 73

Lutsky, A. I., B. K. Zymov, and V. I. Volga.
The relationship between thermal and electrical
conductivities of graphite. Izvestiya Vuzov, no. 5,
1972, 932. (Annotation).

An attempt to correlate thermal conductivity λ with
electric resistivity ρ of graphite at high temperatures is described.
Many researchers previously noted that the $\lambda \times \rho$ product is
constant to a certain degree, but only at room temperature.

Experimental λ and ρ data in the range 80 - 2,500°K
range are given and the $\lambda \times \rho$ values are calculated for artificial
graphites with 1.0 - 2.26 g/cm³ specific weights. At a low tempera-
ture, the $\lambda \times \rho$ of individual graphites varied significantly. At
room temperature, $\lambda \times \rho$ was nearly the same for the graphites
studied. At $T > 1,500^\circ\text{K}$, $\lambda \times \rho = 0.34 - 0.38 \text{ V}^2/\text{degree}$ and is
independent of temperature for all graphites studied with the exception
of those with lowest (1.0 g/cm³) and highest (2.26 g/cm³) specific
weights.

Voronin, V. I., and A. Ye. Blashkov.
Thermal boundary layer on a nonlinear-
thermal plate. Izvuz Aviatsonnaya
tehnika, no. 1, 1972, 119-123.

The equation of energy of a compressible laminar
boundary layer on a semi-finite plate with different local boundary
conditions is analyzed. It is assumed that the $0 \leq \xi \leq 1$ area of the
leading edge, where $\xi = x/l$ and ξ is the longitudinal coordinate,
is cooled to a constant temperature T_w and its equation of energy
is solved by the known Crocco integral. Using this integral and a

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UDC: 621.372.853.3.092.22

ANISIMOV, Ye. V., BANNOVA, O. V., VORONIN, V. I.

"On Propagation of Electromagnetic Waves in an Inhomogeneous Plasma Waveguide"

V sb. Vopr. elektron. tekhniki (Problems of Electronic Technology--collection of works), Saratov, 1971, pp 53-59 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6B148)

Translation: A procedure is described for calculating a dispersion equation for a circular waveguide filled with an inhomogeneous plasma. Two illustrations, bibliography of three titles. Resumé.

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USSR

VORONIN, V. I.

UDC 621.316.721

"Stabilized Current Source for Feeding Superconducting Solenoids"

Moscow, Pribery i Tekhnika Eksperimenta, No 5, 1972, pp 159-161

Abstract: The circuitry of a stabilized current source (0-180 amps) for feeding superconducting solenoids is described. The resistance of the conductors is $3 \cdot 10^{-3}$ ohms, and the current stability is greater than 10^{-4} . Provision has been made for automated current sweep in the range from 1 to 180 amps. Reversing the sweep and halting at any point are permitted. The time for passage through the interval is regulated from 2 to 90 minutes. The current pulsation level is $\sim 10^{-6}$ for a solenoid with an inductance of 0.5 henries. The network intake is 350 watts.

Structurally the instrument comprises three modules. The first module contains a converter, a power amplifier and a six-phase rectifier 28 volts $\times$ 12 amps. The output transistors of the power amplifier are mounted on copper radiators $200 \times 260 \times 2$ mm³. The first module is $300 \times 300 \times 500$ mm³. The rectifying diodes are placed on a copper radiator of the same size. The module

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VORONIN, V. I., Prihory i Tekhnika Eksperimenta, No 5, 1972, pp 159-161

has a fan. The second module is the remote control panel. It has a circuit for obtaining the reference voltage, a sweep generator, a matching amplifier and two power supplies 105 volts $\times$ 20 milliamps. The second module is 160 $\times$ 130 $\times$ 270 mm³. The third module is the F 116/1 photoamplifier.

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USSR

UDC: 51:155.001.57:681.3.06

VORONIN, Yu. A., AMEL'KIN, V. A.

"On Using the Recognition Approach to Solution of Inverse Kinematic Problems of Seismology"

V sb. Mat. probl. geofiz. (Mathematical Problems of Geophysics--collection of works), vyp. 2, Novosibirsk, 1971, pp 285-294 (from: RZh-Kibernetika, No 12, Dec 71, Abstract No 12V1028).

Translation: The authors consider problems on selection of a single model of a medium from some set of possible models and on constructing a general scheme for determining the parameters of this model. It is assumed in this connection that one singly connected hodograph which is explicitly or parametrically given by one or two algebraic or transcendental equations is used to obtain the wave pattern rather than a series of wave hodographs. The analysis is based on the ideas of pattern recognition. Bibliography of 11 titles. V. Mikheyev.

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USSR

UDC: 51:155.001.57:681.3.06

VORONIN, Yu. A., BOROVNIKOV, A. M., SALIN, Yu. S., SOLOV'YEV, V. A., BUR-KHANOV, Kh. Kh.

"On Computer Realization of Stratigraphic Constructions"

V sb. Mat. probl. geofiz. (Mathematical Problems of Geophysics--collection of works), vyp. 2, Novosibirsk, 1971, pp 295-304 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V1027)

Translation: A procedure is given for computer realization of stratigraphic constructions which briefly reduces to the following: 1) with given classifications and enumerations of rocks and types, and a given method of separating lithomatter and biomatter, columns q_k are separated into one-dimensional lithobodies and biobodies, and a set of separated columns (q_k) is obtained in part of the geological space G' ; 2) a description of the (q_k) is given, specifically, a stratigraphic summary column is constructed for G' ; 3) on the basis of the resultant description of the (q_k), a hypothesis is adopted on the method of identifying columns q_k and a set of identified columns $\{q_k\}$ in G' is obtained. The axioms and algorithms for primary description of the set of columns are considered. Bibliography of 17 titles. V. Mikheyev.
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USSR

UDC: 51:155.001.57:681.3.06

VORONIN, Yu. A., MARASULOV, A. F., UMAROV, R. D., KHALIKOV, A. K.

"Introducing Measures of Similarity and Relation for Solving Geological and Geophysical Problems"

V sb. Mat. probl. geofiz. (Mathematical Problems of Geophysics--collection of works), vyp. 2, Novosibirsk, 1971, pp 305-310 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V1029)

Translation: The paper presents an axiomatic approach to introducing measures of similarity on a set of objects, and measures of relation on a set of properties, and also measures of similarity between sets of objects for solving geological and geophysical problems. V. Mikheyev.

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UDC 8.74

VORONIN, YU. A., KOZLOVA, O. S.

"Software for a Computer for Solving Districting Problems"

V sb. Primeneniye mat. metodov i EVM pri poiske polezn. iskopayemykh (Application of Mathematical Methods and Computers for Prospecting Minerals--collection of works), Novosibirsk, 1972, pp 180-199 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V484)

No abstract

USSR

VORONIN, YU. A., AMEL'KIN, V. A., KHURRAMOV, A. D.

"Computer Software for Solving the Problems of Constructing Functions by Experimental Data"

V sb. Primeneniye mat. metodov i EVM pri poiske polezn. iskopayemykh. (Application of Mathematical Methods and Computers when Prospecting Minerals--collection of works), Novosibirsk, 1972, pp 133-149 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V493)

No abstract

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USSR

VORONIN, Yu. A., MARASULOV, A. F., TITOV, A. A., SHEVCHENKO, N. G.

"Computer Programs for Determination of Optimal Subspaces in Order to Solve Recognition Problems"

Primeneniye mat. Metodov i EVM pri Poiske Polezn. Iskopaemykh [Use of Mathematical Methods and Computers in the Search for Useful Minerals -- Collection of Works], Novosibirsk, 1972, pp 150-179 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V858 by E. Vagner).

Translation: The problem of finding information sets of properties is most frequently solved as follows. First some method of evaluating the information content of individual properties is indicated, then considerations are stated allowing approximate determination of the information sets of properties as sets of independent quantities and informative properties individually. In most methods of determination of information content, the information content of a set of properties can be no less than the information content of any subset and is expressed, as a rule, by a single number. The search for the optimal set of properties is performed by random choice. It is clear that a method suitable for all cases which can avoid running through a long list cannot

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VORONIN, Yu. A., MARASULOV, A. F., et. al., *Primeneniye mat. Metodov i EVM pri Poiske Polezn. Iskopaemykh*, Novosibirsk, 1972, pp 150-179.

be developed.

It is suggested that a set of properties be sought, the information content of which is no less than the information content of a certain fixed set of properties. Asymmetrical and symmetrical coupling factors between properties are sought, and a suggested algorithm for running through the information subspaces is described, based on determination of the close components of connection of properties. A generalized block diagram of the algorithm is presented. 37 Biblio. Refs.

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UDC 8.74

VORONIN, Yu. A., MARASULOV, A. F., TITOV, A. A., SHEVCHENKO, N. G.

"Computer Software for Finding Optimum Subspaces to Solve Recognition Problems"

Novosibirsk, Primeneniye mat. metodov i EVM pri poiske polezn. iskopayemykh-- sbornik (Using Mathematical Methods and Computers in Searching for Minerals-- collection of works), 1972, pp 150-179 (from EZh-Matematika, No 1, Jan 73, abstract No 1V858 by E. Vagner)

Translation: The problem of finding informative aggregates of properties is usually solved in the following way: First, some method is assigned for evaluating the informability of individual properties; then considerations are pointed out which enable approximate determination of informative aggregates of properties as aggregates of independent and individually informative properties. In most methods of determining informability the informability of the aggregate of properties cannot be less than the informability of any component subaggregate and, as a rule, is expressed by a single number. The trial and error method is used in searching for the optimum aggregate of properties. Clearly there can be no procedure which avoids a very "extensive" sorting process which is suitable for all cases.

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VORONIN, Yu. A., et al., *Primeneniye mat. metodov i EVM pri poiske polezn. iskopyayemykh*—sbornik, 1972, pp 150-179

It is proposed that an aggregate of properties be sought whose informability is not less than that of some fixed aggregate of properties. Asymmetric and symmetric coefficients of coupling between properties are introduced, and the proposed algorithm for finding informative subspaces is described. This algorithm is based on determining closely related components of connectedness of properties. An over-all flow chart of the algorithm is presented. Bibliography of 37 titles.

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